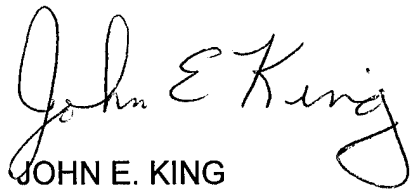
7 August 1996

MEMORANDUM FOR Defense Technical Information Center, ATTN: Ms Gretchen Schlag, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, VA 22060-6218

SUBJECT: Submission of research paper, "Distribution of DoD Dental Classification, Army"

1. Enclosed is a printed copy of the research paper, "Distribution of DoD Dental Classification, Army," dated May 1996, by John E. King, Forest R. Poindexter, and Thomas M. Leiendecker. Please place this into the Defense Technical Information Center retrieval database, and inform the authors of the DTIC report number assigned.

2. Also inclosed is a diskette with a Micro Soft Word document of the same research paper for your use in digital archiving.



JOHN E. KING
COL, U.S. Army Dental Corps

TSCOHS Team
National Naval Medical Center
Naval Dental School-Research Department
8901 Wisconsin Avenue
Bethesda, MD 20889-5602

Military DSN 295-4474
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DISTRIBUTION OF DOD DENTAL CLASSIFICATION

ARMY

Prepared by:

John E. King, Col, USA, DC
Forrest R. Poindexter, Col (sel), USAF, DC
Thomas M. Leiendecker, LCDR, USN, DC

May 1996

from the

1994 TRI-SERVICE COMPREHENSIVE ORAL HEALTH SURVEY

Conducted by CDR A.K. York, USN; LTC F.R. Poindexter, USAF; and LTC M.C. Chisick, USA

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BACKGROUND

The purpose of this report is to analyze the distribution of personnel of the US Army relative to the Department of Defense (DoD) Dental Classification system. Data on the oral health status, dental treatment needs, dental utilization, and satisfaction with military dental care of the Army, Navy, Air Force, and Marines were collected, combined, analyzed, and reported in two volumes titled "1994 Tri-Service Comprehensive Oral Health Survey" (York A.K., Poindexter F.R., and Chisick M.C.). This report limits the study population to Army personnel only, and includes data from both enlisted recruits and non-recruit active duty when appropriate. The definitions and criteria for DoD Dental Classification are contained in the Appendix.**

METHODS

1. Survey Instruments

This cross-sectional survey of active duty personnel and recruits involved collection of quantifiable data from individual soldiers, sailors, and airmen. These data categories included oral health status, dental treatment needs, dental utilization, and perceived need for dental care. Data collection was done using two forms: a clinical exam form and a patient questionnaire. Direct data entry onto notebook computers provided "paperless" data collection and transmission. Clinical exam data was completed by calibrated dental examiners and trained recorders.

2. Clinical Examination

The clinical exam form is divided into five sections. The first section, patient demographic data, was collected by the dental examiner, questioning the patient as necessary to insure accuracy. The remaining sections of the clinical exam collected data on oral health status and treatment needs including prevalence of soft tissue conditions, caries status, clinical-discipline-specific treatment needs, and DoD dental classification. **Examiners were instructed to record treatment which is needed to optimize the patient's oral health, taking into consideration that patient's individual circumstances, and assuming there were no barriers to providing care.**

** For a thorough discussion of the background and methods of this study, see the 1994 TSCOHS Active Duty Report #ADA 299418 and the Recruit Report #ADA 299414 which are available by request from the Defense Technical Information Center Reference and Retrieval Desk, 8725 John J. Kingman Rd., Ste 0944, Fort Belvoir, VA 22060-6218

Diagnosis using current radiographs was also required to fully assess oral conditions, treatment needs, and DoD dental classification. Panoramic radiographs less than 5 years old and bite-wing radiographs less than 2 years old were considered current. Examiners were instructed to take new radiographs, as necessary, for thorough patient diagnosis.

4. Sampling Strategy

The population of interest for this study included all active duty soldiers, sailors, and airmen in the continental United States. The sampling strategy was developed by Molajo and Associates, Consultants in the Mathematical Sciences (a civilian firm specializing in survey sampling design). Active duty personnel information was provided by the Defense Manpower Data Center. Recruits were sampled using single stage, stratified (by gender and race; white, black, other), systematic random sampling. Historic data of the size and composition of the most recent year's recruit population were used to determine sample size and what specific subgroups of interest were feasible to sample in sufficient numbers to allow comparisons across study outcome measures.

Non-recruit personnel were sampled using two stage, stratified, random sampling. The sampling frame consisted of all Army, Air Force, Navy, and Marine bases located in the continental United States (CONUS) with populations of at least 4,000. This resulted in approximately 80% of the CONUS active duty military population being in the sampling frame. After stratifying by service, nine bases per service strata were randomly selected with a probability of selection proportional to each base population (larger bases had greater chance for selection). Next, each selected base population was stratified by gender, race (white, black, other), and military paygrade category (E1-E4, E5-E6, E7-E9, O1-O3, O4-O10). Finally, individuals to be examined were randomly selected from each stratum.

Military members are predominantly white or black males. In order to allow valid statistical comparisons of their outcome measures with other subgroups of the recruit population, we oversampled white, black, and non-white,non-black females and non-white, non-black males. During analysis, data were weighted back to the proportional representation of each group in the actual population. The recruit sample size was 2,711 which represented the 101,072 recruits who passed through the recruit training facilities of the Army, Air Force, Navy, and Marine Corps during the six month data collection period. The target sample size, for active duty (non-recruits), was 15,924, representing 1,699,662 military personnel. For all services combined, 13,050 examinations were completed for an overall, non-recruit, response rate of 82.0%. For the Army, sample size for recruits was 535 representing 34,923; and non-recruit active duty sample was 4393 representing 578,906. (See Table1 for detailed breakout).

RESULTS

During the examination, the overall DoD dental classification and the dental classification within each clinical discipline were recorded for each person examined. Figure 1 depicts the distribution of personnel in each dental class among the populations surveyed.

Figure 1. Percent distribution of dental classes among USA personnel (with Tri-Service results for comparison), 1994 TSCOHS

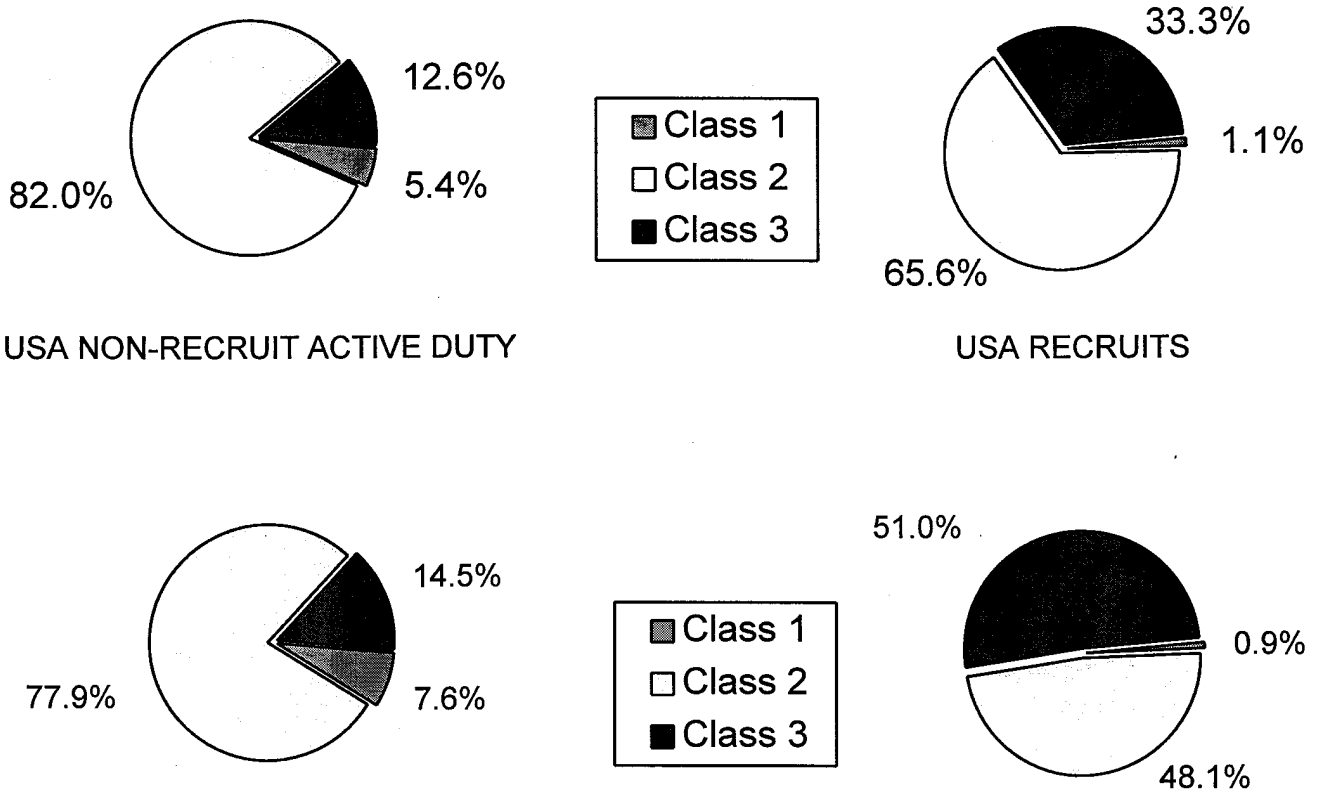
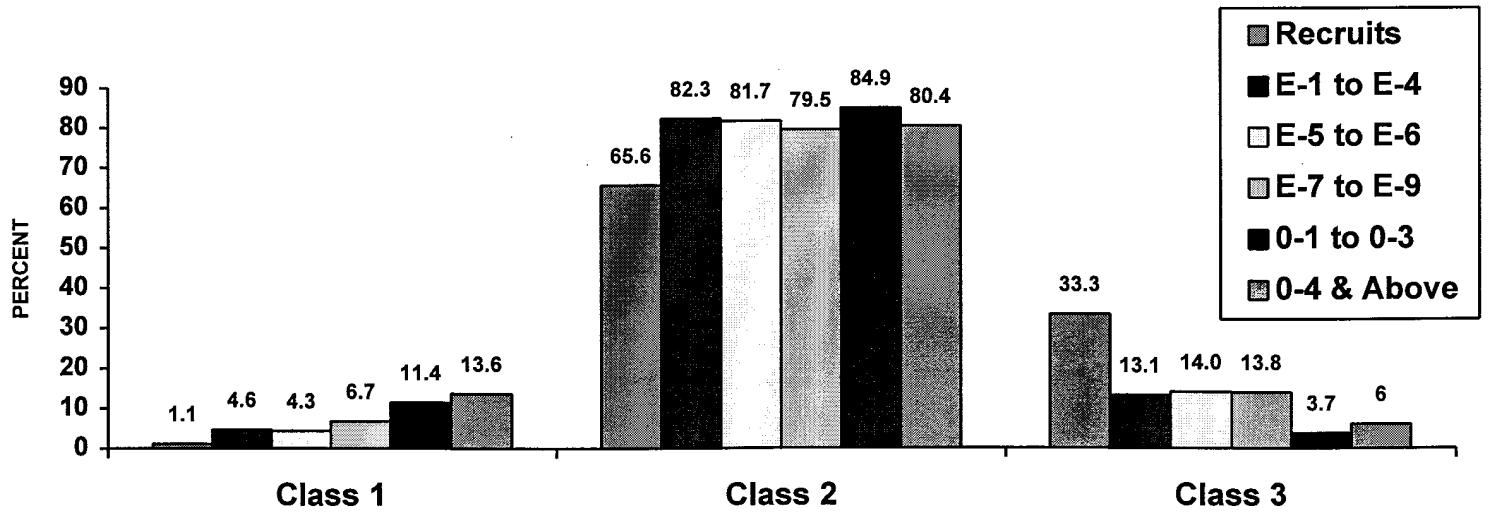


Table1 and Figure 2 provide a breakout of DoD dental classification status of the Army recruit and active duty (non-recruit) sample and estimated population overall and by paygrade.

Table 1. Percent of US Army Personnel in each DoD Dental Class by Paygrade and Overall, 1994 TSCOHS

	Recruits	Enlisted			Officers		Overall AD
		E-1 to E-4	E-5 to E-6	E-7 to E-9	O-1 to O-3	O4 & Above	(Non-recruit)
DoD Dental Class	%	%	%	%	%	%	%
1	1.1	4.6	4.3	6.7	11.4	13.6	5.4
2	65.6	82.3	81.7	79.5	84.9	80.4	82.0
3	33.3	13.1	14.0	13.8	3.7	6.0	12.6
Sample size	535	1,966	1,419	569	308	131	4,393
Population represented	34,923	294,567	163,395	65,939	47,829	7,176	578,906

Figure 2. Percent of USA Personnel in each DoD Dental Class by Paygrade, 1994 TSCOHS



Further examination of each non-recruit dental classification group using logistic regression reveals these ***statistically significant*** differences in likelihood of being in a given dental class: **Officers are more likely to be Class 1 than enlisted personnel. The O-1 to O-3 group is less likely to be in Class 3 than all enlisted groups**. (Figures 3-4) **Among Army recruits, 98.9% require dental treatment and 33.3% enlist with Class 3 dental problems**.

Figure 3. Percent of USA Personnel in DoD Dental Class 1 by Paygrade, 1994 TSCOHS

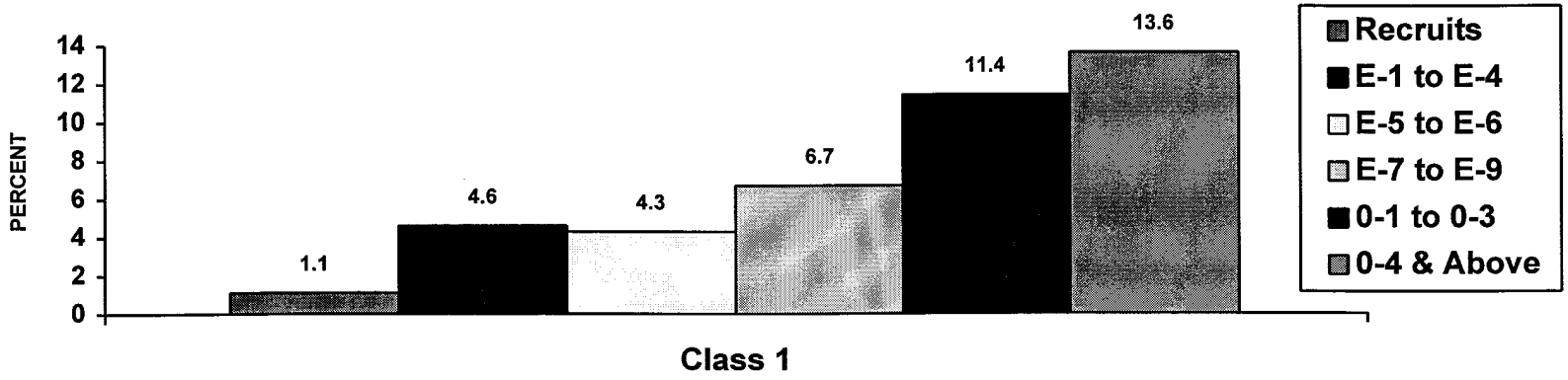


Figure 4. Percent of USA Members in DoD Dental Class 3 by Paygrade, 1994 TSCOHS

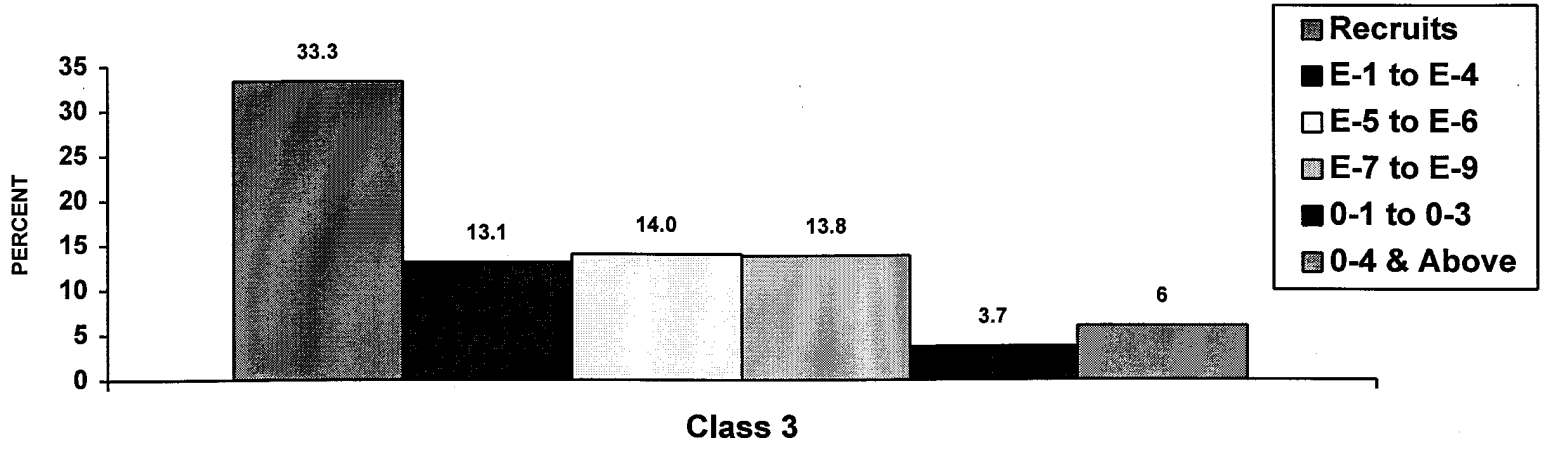


Figure 5 shows that about two-thirds of Army recruits arrive with dental treatment needs which place them in Class 2, while between 80 to 85 per cent of all other Army personnel are in Class 2. Although a significant amount of dental care is being provided to address the most severe problems of new accessions in order to move them out of dental Class 3, **four of every five soldiers of all ranks continue to have need for oral health care.**

Figure 5. Percent of USA Members in DoD Dental Class 2 by Paygrade, 1994 TSCOHS

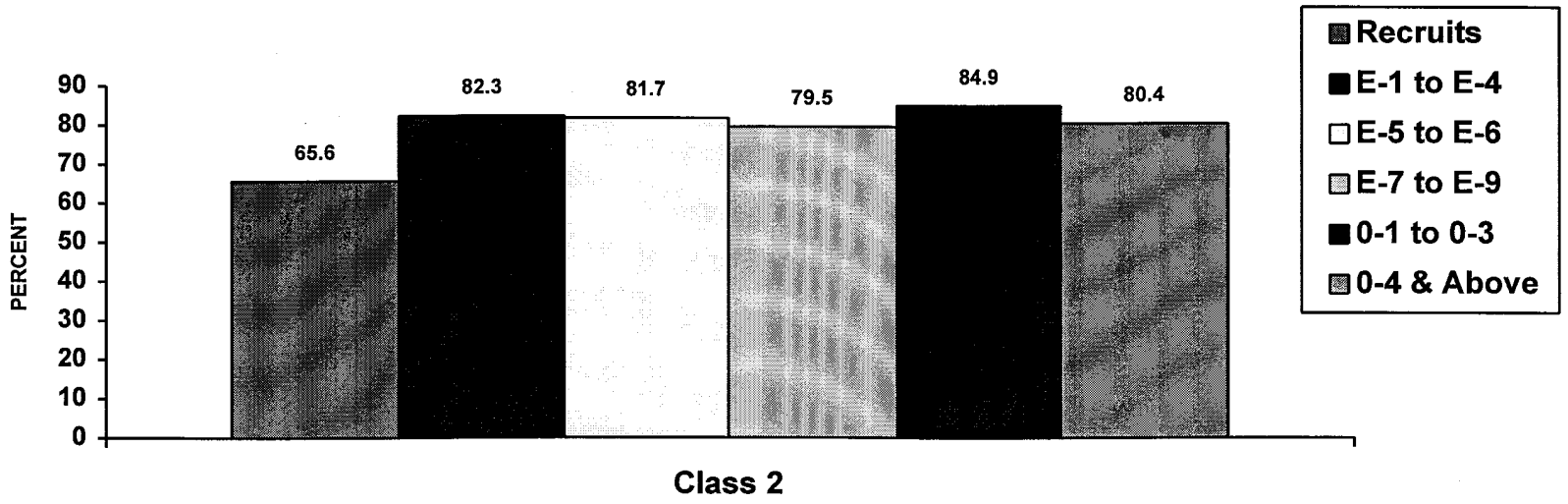
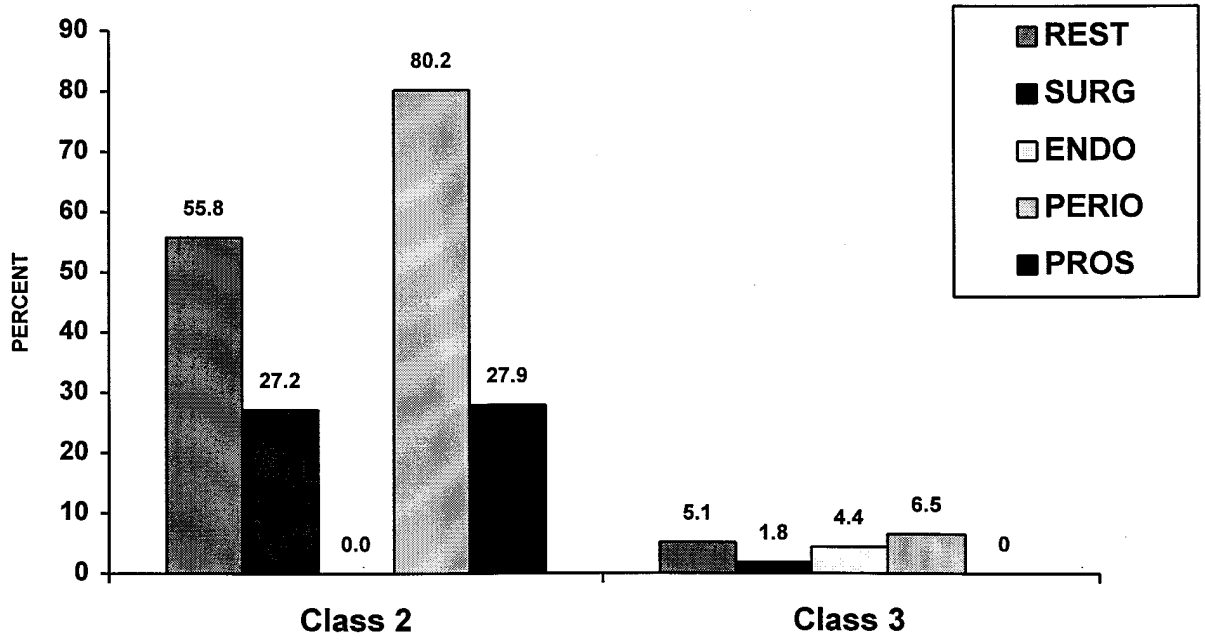


Figure 6 shows the percentage of all non-recruit Army members in DoD dental classification 2 and 3, by type of treatment need. **Among Army members, 5.1% are Class 3 due to restorative treatment needs, 1.8% due to oral surgical needs, 4.4% due to endodontic needs, and 6.5% for periodontal reasons.**

Figure 6. Percent of AD USA Members in DoD Dental Classes 2 and 3 by Type of Treatment Need, 1994 TSCOHS



More than 55% of Army members are Class 2 due to restorative need. About one fourth are Class 2 due to oral surgery need. Over one fourth are Class 2 because of need for prosthodontic treatment. Four of five are Class 2 due to need for periodontal care, and further analysis showed that, contrary to common thought, only **7.2 percent of Army members are Class 2 with oral prophylaxis as their sole dental treatment need**. (Individuals may be Class 2 or Class 3 for more than one type of need, therefore the total of the percentages is more than 100%)

Table 2 below and Figure 7 on the following page show the dental classifications of non-recruit Army members by duty status. Of special deployment personnel, 3.6% are Class1, over 90% are Class 2, and over 6% are Class 3. Of non-special deployment personnel, 5.7% are Class 1, more than 80% are Class 2, and 13.7% are Class 3.

Table 2. Percent of USA Members in each DoD Dental Class by Duty Status, 1994 TSCOHS

	Current Duty Status	
	Special Deployment **	Other
DoD Dental Class	%	%
1	3.6	5.7
2	90.1	80.6
3	6.3	13.7
Sample size	712	3681
Population represented	82398	496508

** Airborne, Special Forces, Air Assault, Aviation Crew

Figure 7. Percent of USA Personnel in each DoD Dental Class by Duty Status (with overall Army and Tri-Service results for comparison), 1994 TSCOHS

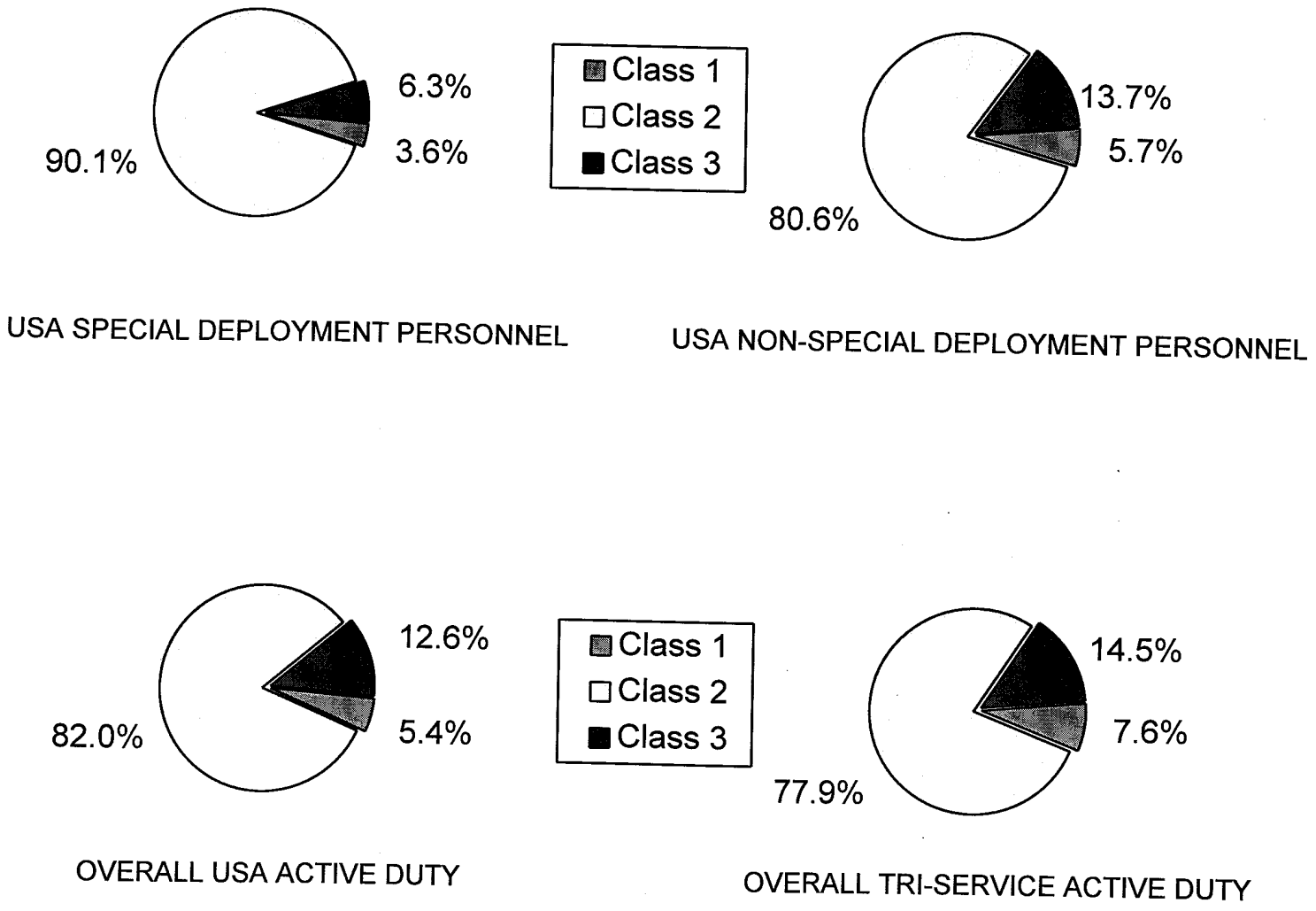


Figure 8 shows the percentage of Army non-recruit members in each dental class along with the self-reported time since their last dental appointment. Little difference is seen among those in each dental class and the differences were not statistically significant after logistic regression. Essentially all USA members had dental visits within the past two years.

Figure 8. USA Non-recruit AD in each Dental Class by Years Since Last Dental Visit, 1994 TSCOHS

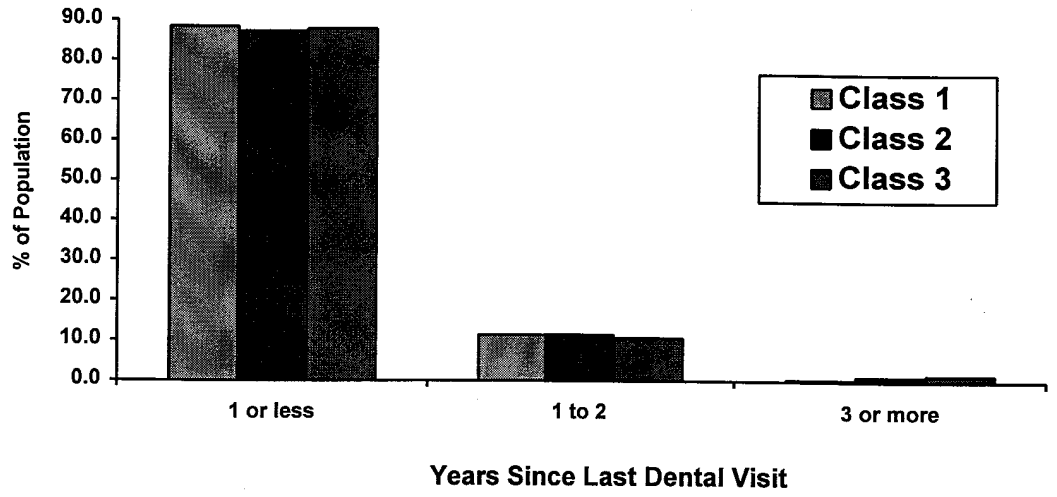
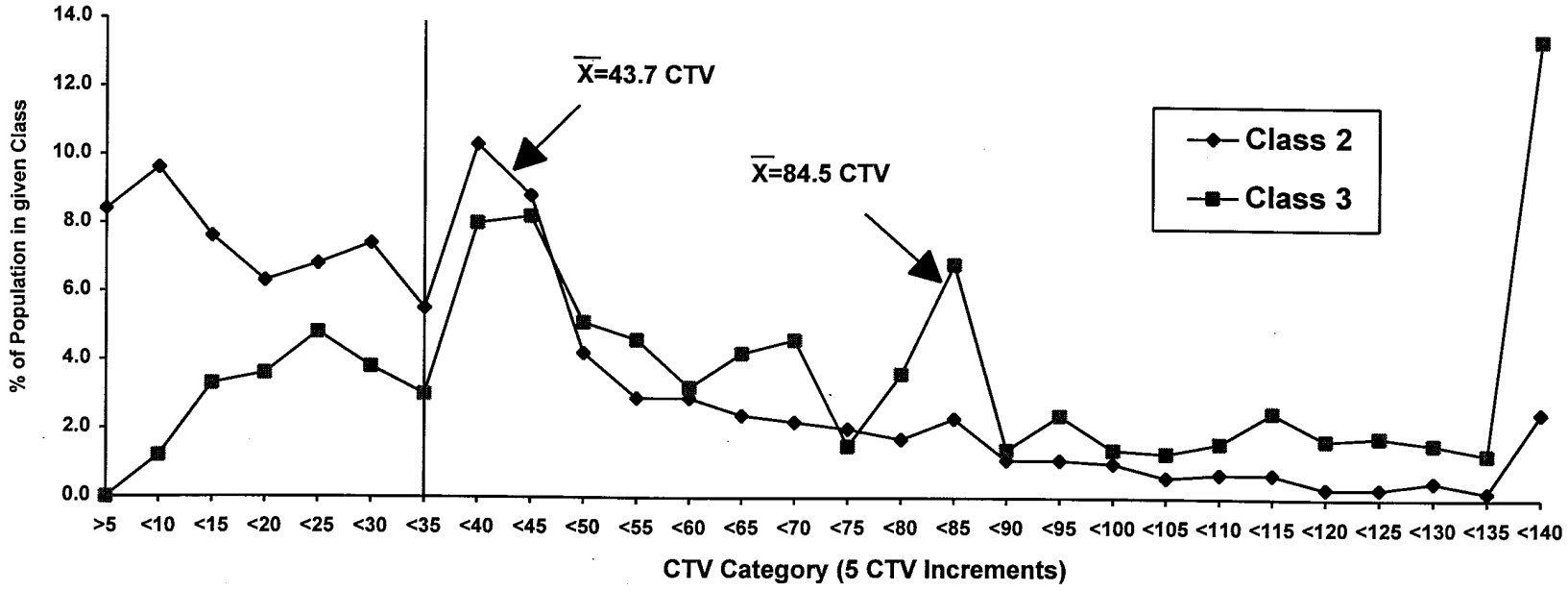


Figure 9 illustrates the distribution of individuals' total dental treatment needs among those who need treatment. Forty-six percent (46%) of Class 2 members need less than 35 CTV* total dental care, compared to 19.7% of Class 3 members. Mean CTV needed by those in Class 2 is 43.7 (Tri-Service mean = 35.2 CTV); for those in Class 3, mean CTV needed is 84.5 (Tri-Service mean = 71.4 CTV). An example of a mix of services represented by 35 CTV might include: prophylaxis-12.6 CTV; 3 restorations-11.4 CTV; single cast crown-20.8 CTV = 34.8 CTV.

Figure 9. USA DoD Dental Class by Amount of Treatment Needed (CTV category), 1994 TSCOHS



* Military dentistry uses a Standardized Code on Dental Procedures which is a modification of the American Dental Association's Code on Dental Procedures and Nomenclature. The military code for dental procedures assigns Composite Time Values (CTV) for each procedure to be used for workload accountability. For every episode of dental care delivered, the care provider records a list of the treatment codes involved. This list of codes is then converted to numeric CTV.

APPENDIX

DOD DENTAL CLASSIFICATION CRITERIA

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Source: DoD Instruction 6410.1, *Standardization of Dental Classifications*

CLASS 1 : not requiring dental treatment or reevaluation within 12 months.

A. No dental caries or defective restorations
B. Arrested caries for which treatment is not indicated
C. Healthy periodontium, no bleeding on probing, oral prophylaxis not indicated
D. Replacement of missing teeth not indicated
E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis and are not recommended for prophylactic removal
F. Absence of temporomandibular disorder; stable occlusion

CLASS 2: conditions present which, if not treated or followed up, are **not expected** to, but have the potential to result in dental emergencies within 12 months.

A. Treatment or follow-up indicated for dental caries with minimal extension into dentin or minor defective restorations easily maintained by the patient where the condition does not cause definitive symptoms
B. Interim restorations or prostheses that can be maintained by the patient where the underlying condition does not cause definitive symptoms. (This includes teeth that have been restored with permanent restorative materials, but for which protective coverage is indicated).
C. Edentulous areas requiring prostheses but not on an immediate basis
D. Periodontal disease or peridontium exhibiting:
   (1) Requirement for oral prophylaxis
   (2) Requirement for maintenance therapy; this includes stable or non-progressive mucogingival conditions requiring periodic evaluation
   (3) Non-specific gingivitis
   (4) Early or mild adult periodontitis
   (5) Supragingival or slight subgingival calculus

CLASS 2: (Cont.)

E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis, but which are recommended for prophylactic removal
F. Active orthodontic treatment
G. Temporomandibular disorder patients in maintenance therapy

CLASS 3: oral conditions which, if not treated, **are expected** to result in dental emergencies within 12 months. When there are questions in determining classification between Class 2 and Class 3, patient should be placed in Class 3.

A. Dental caries, tooth fractures, or defective restorations where the condition extends beyond the dentinoenamel junction and causes definitive symptoms; dental caries with moderate or advanced extension into dentin; and defective restorations not maintained by the patient.
B. Interim restorations or prostheses that cannot be maintained for a 12-month period. (This includes teeth that have been restored with permanent restorative materials but for which protective coverage is indicated).
C. Periodontal diseases or periodontium exhibiting:
    (1) Acute gingivitis or pericoronitis
    (2) Active moderate to advanced periodontitis
    (3) Periodontal abscess
    (4) Progressive mucogingival condition
    (5) Periodontal manifestations of systemic disease or hormonal disturbances
    (6) Moderate to heavy subgingival calculus
D. Edentulous areas or teeth requiring immediate prosthodontic treatment for adequate mastication, communication, or acceptable esthetics
E. Unerupted, partially erupted, or malposed teeth with historical, clinical, or radiographic signs or symptoms of pathosis, that are recommended for removal

CLASS 3: (Cont)

F. Chronic oral infections or other pathologic lesions including:
    (1) Pulpal or periapical pathology requiring treatment
    (2) Lesions requiring biopsy or awaiting biopsy report
G. Emergency situations requiring therapy to relieve pain, treat trauma, treat acute oral infections, or provide timely follow-up care (e.g., drain or suture removal) until resolved
H. Temporomandibular disorder requiring active treatment